

Vocational Qualifications Pathway (VQP) for Internet of Things (IoT)

Area Job Level	Internet of Things (IoT)
Master Level	<i>The ICT practitioners at this level are mainly responsible for decision-making processes. They oversee the entire IT operations and strategic development direction in the organizations. The Professionals at this level are required to possess broad corporate perspective, good communication skills and in-depth technology knowledge.</i>
Relevant Job Titles	Director of IoT
	Chief Digital Officer (IoT)
Specialist Level	<i>The ICT practitioners at this level are mainly involved in managerial processes. They may work with individual technical departments and manage those departments by applying their technical and managerial skills. The major tasks performed by the professionals at this level are to manage individual activities and project segments, and to lead the projects towards completion within the assigned budget and stipulated deadline.</i>
Relevant Job Titles	IoT Software Engineer
	IoT Solution Architect
	IoT Business Manager
Practitioner Level	<i>The ICT practitioners at this level manage certain parts of technical processes depending on their subject matter expertise. The professionals at this level may be sub-degree graduates or those who possess certain work experience in the field.</i>
Relevant Job Titles	IoT Support Engineer
	Assistant IoT Developer
Support Level	<i>The ICT practitioners at this level provide entry-level technical operation and support functions depending on their subject matter expertise. The practitioners at this level may be S6 graduates with relevant ICT skills and knowledge or those who possess little work experience in the field.</i>
Relevant Job Titles	Computer Operator
	User Support Staff
	Technical Support Staff (TSS)
	Field Technician
	Help Desk Operator

Proposed Competency Requirements (Internet of Things - Master Level)

Relevant Job Titles:

- Director of IoT / Chief Digital Officer (IoT)

Area of Work / Cluster Name	Major Tasks	Competency Requirements	Units of Competency (UoCs) Number	Relevant Qualification for fulfilling Competency Requirements
IoT policies and strategies	1. Develop and manage the IoT strategy, operational and engagement plans	<ul style="list-style-type: none"> ▪ Define a system migration plan ▪ Develop procedures to implement incident response plan ▪ Formulate IT strategies and policies ▪ Review the emerging technologies and cross-functional strategies 	<p>111155L6</p> <p>111170L5</p> <p>ITSWSM603A</p> <p>111207L6</p>	Obtain qualification via training programmes (QF Level 6)
	2. Define the business model for how business operations can be enabled in IoT	<ul style="list-style-type: none"> ▪ Formulate business strategies and policies ▪ Identify and evaluate information technologies that support the objectives of an organisation 	<p>111201L6</p> <p>111202L6</p>	
	3. Coach and enable team to identify and proactively engage with key customer, technical decision makers and influencers to help unblock technical obstacles	<ul style="list-style-type: none"> ▪ Determine technology mix for the design and development of embedded software systems ▪ Conduct solicitation planning 	<p>111126L6</p> <p>111197L5</p>	

Area of Work / Cluster Name	Major Tasks	Competency Requirements	Units of Competency (UoCs) Number	Relevant Qualification for fulfilling Competency Requirements
Quality Assurance and information security for IoT	4. Ensures consistency and quality through capturing, sharing, and adherence of standards and best practices.	<ul style="list-style-type: none"> ▪ Review and comply with organisational policies and procedures, relevant laws and regulatory requirements ▪ Define data governance policies and architecture principles ▪ Review the ethical and social issues for IT applications ▪ Set policy to control data security and privacy 	<p style="text-align: center;">111205L6</p> <p style="text-align: center;">111123L6</p> <p style="text-align: center;">111208L6</p> <p style="text-align: center;">111206L6</p>	(Continued) Obtain qualification via training programmes (QF Level 6)
Strategic management	5. Overview and review work on the team (Generic Skills)	<ul style="list-style-type: none"> ▪ Lead and motivate a team ▪ Delegate responsibilities ▪ Manage changes 	<p style="text-align: center;">ITSWG604A</p> <p style="text-align: center;">ITSWG606A</p> <p style="text-align: center;">ITSWG613A</p>	

Proposed Competency Requirements (Internet of Things - Specialist Level)

Relevant Job Titles:

- IoT Software Engineer / IoT Solutions Architecture / IoT Business Manager

Area of Work / Cluster Name	Major Tasks	Competency Requirements	Units of Competency (UoCs) Number	Relevant Qualification for fulfilling Competency Requirements
Management and development of IoT System	1. Manage the strategy and development of Internet of Things (IoT) ecosystem of the organization, including platform requirements, customer experience and market strategies.	<ul style="list-style-type: none"> ▪ Master the Internet of Things development technology ▪ Design and develop data management tools and services to manage the target data based on different requirements 	107218L5 111142L6	Obtain qualification via training programmes (QF Level 5)
	2. Ensure data and information about the organization's IoT portfolio is clearly understood both internally and externally in the most professional, accessible and secure ways	<ul style="list-style-type: none"> ▪ Define metrics to ensure that a technology architecture meets the business goals ▪ Develop and perform data acquisition and collection processes and conduct pre-processing and exploratory data analysis 	111127L5 111131L5	
	3. Carry out designing, coding and testing features of IoT devices	<ul style="list-style-type: none"> ▪ Evaluate the results of application security assessment for improvement recommendation ▪ Perform inspection for the programme code and software documents ▪ Develop test plans for various levels of testing 	111173L5 ITSWDM506A ITSWDM507A	

Area of Work / Cluster Name	Major Tasks	Competency Requirements	Units of Competency (UoCs) Number	Relevant Qualification for fulfilling Competency Requirements
Project Management (IoT)	4. Monitor and control IoT project execution according to the defined plan and objectives	<ul style="list-style-type: none"> ▪ Monitor and control project execution ▪ Monitor, control and update project schedule ▪ Manage the execution of a project quality management plan 	ITSWPM605A ITSWPM504A ITSWPM509A	(Continued) Obtain qualification via training programmes (QF Level 5)
	5. Research and recommend technologies to improve current systems and apply subject matter expertise and thought leadership for shaping the organization's long-term IoT strategy	<ul style="list-style-type: none"> ▪ Analyze the available solutions from IT service providers ▪ Conduct source selection and/or contract development 	111199L4 ITSWPM523A	

Proposed Competency Requirements (Internet of Things - Practitioner Level)

Relevant Job Titles:

- IoT Support Engineer / Assistant IoT Developer

Area of Work / Cluster Name	Major Tasks	Competency Requirements	Units of Competency (UoCs) Number	Relevant Qualification for fulfilling Competency Requirements
Installation and configuration of hardwares and softwares for IoT devices	1. Assist in the design and development of IoT software with clear understanding of sensors and network communication among digital devices	<ul style="list-style-type: none"> ▪ Install and configuration of internet server application ▪ Understand key characteristics of embedded software systems ▪ Plan and develop the analytics and modeling tools ▪ Manage and maintain the programme source 	111120L4 ITSWAR521A 111147L6 ITSWDM505A	Obtain qualification via training programmes (QF Level 4)
	2. Coordinate with end-users, sites contacts, vendors and in-house cross functional teams for implementing IoT projects	<ul style="list-style-type: none"> ▪ Perform system testing against user, technical and hosting requirements ▪ Perform installation, configuration and testing of network equipment and devices ▪ Define user requirements 	111160L4 111106L3 111162L4	
	3. Perform trouble-shooting with IoT devices	<ul style="list-style-type: none"> ▪ Analyse the performance, latency and accessibility of systems ▪ Perform network testing ▪ Apply diagnostic and troubleshooting skills to solve hardware, software and networking related issues 	111130L4 111107L4 111121L4	

Area of Work / Cluster Name	Major Tasks	Competency Requirements	Units of Competency (UoCs) Number	Relevant Qualification for fulfilling Competency Requirements
Quality assurance and information security (IoT)	4. Implement system operational security and ensure data privacy.	<ul style="list-style-type: none"> ▪ Apply encryption technology to send data ▪ Prepare system operation documentation ▪ Implementing monitoring equipment to monitor infrastructure failure and security breaches 	<p>107233L4</p> <p>111200L4</p> <p>111429L4</p>	<p>(Continued)</p> <p>Obtain qualification via training programmes (QF Level 4)</p>

Proposed Competency Requirements (Internet of Things - Support Level)

Relevant Job Titles:

- Computer Operator / User Support Staff / Technical Support Staff (TSS) / Help Desk Operator / Field Technician

Area of Work / Cluster Name	Major Tasks	Competency Requirements	Units of Competency (UoCs) Number	Relevant Qualification for fulfilling Competency Requirements
Network Support	1. Network Support	<ul style="list-style-type: none"> ▪ Install and configure client/server application ▪ Configure WAN connection ▪ Troubleshoot network issues 	<p>107882L3</p> <p>107883L3</p> <p>107884L3</p>	Obtain qualification via training programmes (QF Level 3) Or RPL Mechanism (QF Level 3 RPL Cluster: ITOS010L3)
Network and Security Support	2. Network and Security Support	<ul style="list-style-type: none"> ▪ Build a small wireless LAN ▪ Install and configure network components/devices ▪ Install and configure client/server application ▪ Strengthen workstation protection ▪ Troubleshoot web browser and connection issues 	<p>107879L2</p> <p>107880L2</p> <p>107882L3</p> <p>107891L3</p> <p>107909L3</p>	Obtain qualification via training programmes (QF Level 3) Or RPL Mechanism (QF Level 3 RPL Cluster: ITOS016L3)
System Security Support	3. System Security Support	<ul style="list-style-type: none"> ▪ Create and maintain user accounts on server ▪ Configure user access control on server ▪ Administer system security 	<p>107885L2</p> <p>107886L3</p> <p>107888L3</p>	Obtain qualification via training programmes (QF Level 3) Or RPL Mechanism (QF Level 3 RPL Cluster: ITOS009L3)
User Support	4. User Support	<ul style="list-style-type: none"> ▪ Provide support to mobile device users ▪ Troubleshoot client device hardware issues ▪ Perform remote support 	<p>107904L3</p> <p>107905L3</p> <p>107907L3</p>	Obtain qualification via training programmes (QF Level 3) Or RPL Mechanism (QF Level 3 RPL Cluster: ITOS012L3)

Area of Work / Cluster Name	Major Tasks	Competency Requirements	Units of Competency (UoCs) Number	Relevant Qualification for fulfilling Competency Requirements
Web Support	5. Web Support	<ul style="list-style-type: none"> ▪ Troubleshoot web browser and connection issues ▪ Maintain website performance ▪ Build simple website using content management systems ▪ Maintain website 	<p>107909L3</p> <p>107910L3</p> <p>107911L3</p> <p>107912L3</p>	<p>Obtain qualification via training programmes (QF Level 3)</p> <p>Or</p> <p>RPL Mechanism (QF Level 3 RPL Cluster: ITOS013L3)</p>
Application Support (Technical Support)	6. Application Support	<ul style="list-style-type: none"> ▪ Coordinate application change requests with developer ▪ Install and configure Apps on client devices ▪ Perform application configuration ▪ Troubleshoot application problems 	<p>107872L2</p> <p>107873L2</p> <p>107874L2</p> <p>107875L3</p>	<p>Obtain qualification via training programmes (QF Level 2)</p> <p>Or</p> <p>RPL Mechanism (QF Level 2 RPL Cluster: ITOS003L2)</p>